

Current Water Levels

Abstract

The map shows 3172 hydrometric stations, 1491 active and 1681 inactive, located on rivers and lakes across the country. All the stations on the map are situated in a drainage area of 200 square kilometres or more. For 1200 stations shown on the map, surface water level measurements are recorded in real time, every three hours daily, when in operation, although the number of stations recording data varies throughout the year. Hydrometric stations record information on the water level, flow velocity and discharge. Water level is the elevation at the water's surface; flow velocity is the rate of water flow; and discharge is the amount of water flowing past a point in a unit of time. For both active and inactive stations recorded water data are available. The hydrometric network is run and operated through a federal-provincial cost-sharing program. The map also shows eleven major drainage areas, 164 sub-drainage areas and 626 watersheds.

Hydrometric data are used to manage water levels, flow and supply. Flood-forecasting centres and hydroelectric generating companies rely on the data to prepare accurate and up-to-date forecasts. Using hydrometric stations to track the water levels and other properties of lakes and rivers is very useful for water management.

Fluctuations in river and lake levels are a frequent and normal occurrence. River and lake levels vary annually due to the spring melt of ice and snow, and can often rise and fall over the course of several days or even a few hours. Other factors, including ice jams and heavy precipitation during spring melt, can also cause water levels to rise quickly.

A large decline or rise in the water levels of lakes and rivers over a number of years can have severe impacts on the surrounding region. A prolonged drop in the water level of a lake can reduce agricultural productivity or have an impact on the sustainability of wildlife species (including vegetation) in adjacent wetlands and coastal/shoreline habitats. Conversely, a rise could flood these same habitats, again with negative impacts.

From a human standpoint, an increase in water level can impact properties through flooding, whereas a decrease can make them less accessible to water. Through continuous monitoring of water levels, these trends can be detected at an early stage, allowing for mitigation of, and/or adaptation to, the potentially harmful effects or impacts. Variation in water level over a shorter time period of a few hours to a day does not have the same lasting effects on the surrounding landscape and ecosystem as longer term variations, but it can have a considerable impact on commercial shipping and recreational boaters. Certain waterways become

inaccessible for larger vessels and the loading of large ships may become difficult in shallower ports.

For further information on hydrometric stations, refer to the following Environment Canada Web site: Environment Canada. Water Survey of Canada. Hydrometric Program (http://www.wsc.ec.gc.ca/hydrometric/main_e.cfm?cname=hydrometric_e.cfm).

Map Sources

Hydrometric Stations

Environment Canada. 2008. Hydrometric Stations Program.

Hydrology

Natural Resources Canada. 2003. National Scale Frameworks Hydrology - Drainage Areas, Canada. Version 5.3.

References

Environment Canada. 2008. Hydrometric Program
(http://www.wsc.ec.gc.ca/hydrometric/main_e.cfm?cname=hydrometric_e.cfm).

Environment Canada. 2004. Fluctuating Water Levels
(http://www.ec.gc.ca/WATER/en/nature/lakes/e_levels.htm).

Environment Canada. 2006. Effects of Climatic Conditions and Fluctuating Water Levels on St. Lawrence River Wetlands (http://www.qc.ec.gc.ca/csl/pro/pro030ch_e.html).

Saint-Laurent Vision 2000. 2002. The Effects of Water Level Fluctuations on the St. Lawrence Ecosystem. St. Lawrence Vision 2000 Newsletter, Volume 11, Issue 4
(http://www.slv2000.qc.ca/bibliotheque/lefleuve/vol11no4/volume11_4_accueil_a.htm).

Statistics Canada. 2007. Canadian Environmental Sustainability Indicators: Socio-economic Information (<http://www.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=16-253-XWE&lang=eng>).

Related Web sites (1999 – 2009)

Federal Government

Environment Canada. Water Survey of Canada. Hydrometric Program
http://www.wsc.ec.gc.ca/hydrometric/main_e.cfm?cname=hydrometric_e.cfm
This program provides for the collection, interpretation and dissemination of data and information on surface-water quantity - information that is vital to meet both water-management and environmental needs across the country.